STATE OF CALIFORNIA EDMUND G. BROWN JR., Governor

PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

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Ratesetting

TO PARTIES OF RECORD IN RULEMAKING 13-11-005:

This is the proposed decision of Administrative Law Judges Julie A. Fitch and Valerie U. Kao. Until and unless the Commission hears the item and votes to approve it, the proposed decision has no legal effect. This item may be heard, at the earliest, at the Commission's September 28, 2017 Business Meeting. To confirm when the item will be heard, please see the Business Meeting agenda, which is posted on the Commission's website 10 days before each Business Meeting.

Parties of record may file comments on the proposed decision as provided in Rule 14.3 of the Commission's Rules of Practice and Procedure.

The Commission may hold a Ratesetting Deliberative Meeting to consider this item in closed session in advance of the Business Meeting at which the item will be heard. In such event, notice of the Ratesetting Deliberative Meeting will appear in the Daily Calendar, which is posted on the Commission's website. If a Ratesetting Deliberative Meeting is scheduled, ex parte communications are prohibited pursuant to Rule 8.3(c)(4)(B).

/s/ ANNE E. SIMON
Anne E. Simon
Acting Chief Administrative Law Judge

AES:lil

Attachment

Decision **PROPOSED DECISION OF ALJS FITCH AND KAO** (Mailed 8/25/2017)

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking Concerning Energy Efficiency Rolling Portfolios, Policies, Programs, Evaluation, and Related Issues.	Rulemaking 13-11-005

DECISION ADOPTING ENERGY EFFICIENCY GOALS FOR 2018 - 2030

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DECISION ADOPTING ENERGY EFFICIENCY GOALS FOR 2018 - 2030

Summary

This decision:

1) adopts energy savings goals for ratepayer-funded energy efficiency program portfolios for 2018 and beyond based on assessment of economic potential using the Total Resource Cost test, the 2016 update to the Avoided Cost Calculator and a greenhouse gas adder that reflects the California Air Resources Board Cap-and-Trade Allowance Price Containment Reserve Price;
2) defers adoption of cumulative goals until Commission Staff can assess the viability of using a method for calculating savings persistence, to be developed by the California Energy Commission.

This proceeding remains open.

1. Background

Public Utilities (Pub. Util.) Code Sections (§) 454.55 and 454.56 require the Commission (or CPUC), in consultation with the California Energy Commission (CEC), to identify all potential achievable cost-effective electricity and natural gas efficiency savings and "establish efficiency targets" for electrical and gas corporations to achieve.[1] To this end, Commission Staff manages the development of a potential and goals study that provides the technical analysis for assessing the cost-effective energy savings potentially available in the State's residential and commercial building stocks, residential and commercial equipment and processes, industrial sector, and agricultural sector. We use this study to set energy savings goals, which in turn inform the planning activities of

[1] Cal. Pub. Util. Code § 454.55(a)(1): "The commission, in consultation with the Energy Commission, shall identify all potentially achievable cost-effective electricity efficiency savings and establish efficiency targets for an electrical corporation to achieve, pursuant to Section 454.5, consistent with the targets established pursuant to subdivision (c) of Section 25310 of the Public Resources Code." Cal. Pub. Util. Code § 454.56: "(a) The commission, in consultation with the Energy Commission, shall identify all potentially achievable cost-effective natural gas efficiency savings and establish efficiency targets for the gas corporation to achieve, consistent with the targets established pursuant to subdivision (c) of Section 25310 of the Public Resources Code."

the energy efficiency program administrators, Commission Staff in energy long term planning and procurement/integrated resource planning, and other State agencies, including the CEC, California Air Resources Board (CARB), and the California Independent System Operator.

Decision (D.) 15-10-028 established a "bus stop" approach to incorporating new information into required energy efficiency work products, such as the potential and goals study, on a regular basis.[2] Pursuant to D.15-10-028, the Commission needs to adopt goals for 2018 forward, and to incorporate new information that updates or modifies some of the inputs and approaches to estimating energy efficiency potential.

1.1. New Statute Reflected in the Potential Study

Importantly, two new pieces of legislation directly impact the modeling and development of the potential and goals study for post-2017 (hereafter, "Potential Study"). These are Assembly Bill (AB) 802 (Stats. 2015, Chap. 590) and Senate Bill (SB) 350 (Stats. 2015, Chap. 547).

AB 802 requires, among other things, that: (i) energy efficiency be achieved not only through equipment installations but also through operational, behavioral and retrocommissioning activities (often referred to as "BROs"); (ii) the Commission use existing conditions as the default baseline for determining energy efficiency savings; and (iii) investor-owned utilities (IOUs) are authorized to provide incentives for measures that bring buildings into compliance with (but do not necessarily exceed) applicable building standards code. In March 2016, Commission Staff published an analysis of potential energy efficiency savings from both operational efficiency and behavioral initiatives, and "to-code" savings (i.e., savings from measures that address below-code

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[2] D.15-10-028 established the current rolling portfolio framework for energy efficiency portfolios; central to this framework is the "bus stop" approach for the various technical aspects of energy efficiency work. *See* D.15-10-028 at 29, Finding of Fact 20, and Appendix 6.

equipment) that may be targeted as a result of AB 802 (AB 802 Technical Analysis).[3] The Potential Study reflects this work to estimate potential savings as required by AB 802, and incorporates a new subset of market potential, described as "below-code savings," or savings "that is not materializing in the market because there is no incentive [prior to AB 802] for the customer to upgrade their existing equipment."

In addition, SB 350 requires, among other things, that the CEC establish annual targets for statewide energy efficiency savings and demand reduction that will achieve a cumulative doubling of statewide energy efficiency savings in electricity and natural gas final end uses of retail customers by January 1, 2030. SB 350 specifies that these annual targets shall be based on the mid-case estimate of additional achievable energy efficiency in the 2015-2025 California Energy Demand Forecast, to the extent such is cost effective, feasible and will not adversely impact public health and safety.[4] SB 350 also specifies that the Commission set energy efficiency goals based on studies that are not restricted by past levels of savings.[5] Pursuant to this requirement, Staff has directed Navigant Consulting, Inc. (Navigant) to prepare a potential study that examines energy efficiency

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[3] Wikler et al. (2016). AB 802 Technical Analysis: Potential Savings Analysis. Retrieved from California Public Utilities Commission website: http://www.cpuc.ca.gov/WorkArea/DownloadAsset.aspx?id=11189 (as of August 8, 2017).

[4] Cal. Public Resources Code § 25310 (c)(1): "On or before November 1, 2017, the commission, in collaboration with the Public Utilities Commission and local publicly owned electric utilities, in a public process that allows input from other stakeholders, shall establish annual targets for statewide energy efficiency savings and demand reduction that will achieve a cumulative doubling of statewide energy efficiency savings in electricity and natural gas final end uses of retail customers by January 1, 2030. The commission shall base the targets on a doubling of the midcase estimate of additional achievable energy efficiency savings, as contained in the California Energy Demand Forecast, 2015-2025, adopted by the commission, extended to 2030 using an average annual growth rate, and the targets adopted by local publicly owned electric utilities pursuant to Section 9505 of the Public Utilities Code, extended to 2030 using an average annual growth rate, to the extent doing so is cost effective, feasible, and will not adversely impact public health and safety."

[5] Cal. Public Resources Code § 23510(c)(4): "In assessing the feasibility and cost-effectiveness of energy efficiency savings for the purposes of paragraph (1), the commission and the Public Utilities Commission shall consider the results of energy efficiency potential studies that are not restricted by previous levels of utility energy efficiency savings."

potential under various scenarios/assumptions regarding cost-effectiveness and program engagement. In January 2017, the CEC opened Docket number 17-IEPR-06 in its 2017 Integrated Energy Policy Report proceeding to develop a framework for establishing the energy efficiency "doubling" targets as specified and required by SB 350.[6] The Potential Study is intended to inform the CEC's process, which will result in annual targets adopted on or before November 1, 2017.

1.2. New Commission Policy Reflected in the Potential Study

Two other important policy developments that we intended to pick up during this bus stop originate from the Commission's Integrated Distributed Energy Resources (IDER) proceeding, R.14-10-003. First, D.16-06-007 adopts several updates to the Commission's Avoided Cost Calculator and directs Staff to recommend updates to the Avoided Cost Calculator annually through the Commission's resolution process.[7] Importantly, D.16-06-007 specifies that the Avoided Cost Calculator, starting with the 2016 update, should apply to cost-effectiveness analyses of all distributed energy resources (including energy efficiency, demand response, and distributed generation).[8] Second, in February 2017, the assigned Administrative Law Judge (ALJ) in R.14-10-003 issued a ruling seeking comment on a Staff proposal for a Societal Cost Test of distributed energy resources (Staff Proposal).[9] Of particular import for the purpose of evaluating energy efficiency potential, the Staff Proposal includes incorporation of a

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[6] See footnote 4 for definition of "doubling" pursuant to SB 350.

[7] D.16-06-007 Decision to Update Portions of the Commission's Current Cost-Effectiveness Framework, issued June 15, 2016, Ordering Paragraph 2.

[8] D.16-06-007 Ordering Paragraph 1.h.

[9] R.14-10-003 Administrative Law Judge's Ruling Taking Comment on Staff Proposal Recommending a Societal Cost Test, issued February 9, 2017. Attachment A "Distributed Energy Resources Cost Effectiveness Evaluation: Societal Test, Greenhouse Gas Adder, and Greenhouse Gas Co-Benefits. An Energy Division Staff Proposal."

greenhouse gas (GHG) "adder" into the Commission's Avoided Cost Calculator.[10] The purpose of this GHG adder is to recognize the value of reduced carbon emissions made possible by distributed energy resources beyond the market value of Cap-and-Trade allowances and compliance with 2030 GHG reduction goals, which were enacted after the 2016 update of the Avoided Cost Calculator.[11]

On July 14, 2017, the assigned ALJ in R.14-10-003 issued a proposed decision to adopt an interim GHG adder value, based on the CARB Cap-and-Trade Allowance Price Containment Reserve price (Cap-and-Trade APCR Price), to enable the Commission to assess and adopt updated energy efficiency goals.

2. Overarching Considerations in Setting 2018 - 2030 Goals

Our intent with respect to adopting energy efficiency goals is to use the best available assessment of what is realistically achievable, based on our most accurate assumptions regarding technical feasibility, cost-effectiveness and customer adoption.

2.1. Realistic, Aggressive Yet Achievable Goals

In past decisions that updated energy efficiency goals, the Commission determined that an assessment of market potential – not technical or economic potential – provided a reasonable basis for estimating what the ratepayer-funded programs could and should realistically achieve.[12] Technical potential reflects the universe of potential savings that

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[10] While the Staff Proposal refers to a greenhouse gas (GHG) adder, it acknowledges that "[t]he price of carbon allowances that energy utilities must use to comply with [the California Air Resources Board's] cap and trade program are already incorporated in the energy (MWh) value in the current [Avoided Cost Calculator]." The proposed GHG adder is intended to reflect "the full avoided cost of carbon that accrues to utility ratepayers." See Staff Proposal at 17-18.

[11] Senate Bill 32 (Stats. 2016, Chap. 249) adds: Cal. Health and Safety Code § 38566: "In adopting rules and regulations to achieve the maximum technologically feasible and cost-effective greenhouse gas emissions reductions authorized by this division, the state board shall ensure that statewide greenhouse gas emissions are reduced to at least 40 percent below the statewide greenhouse gas emissions limit no later than December 31, 2030."

[12] D.15-10-028 Decision Re Energy Efficiency Goals for 2016 and Beyond and Energy Efficiency Rolling Portfolio Mechanics, issued October 28, 2015, pp. 11-17; D.14-10-046 Decision Establishing

Footnote continued on next page

could be achieved if the most efficient, technically applicable opportunities were immediately adopted. Economic potential is the subset of technical potential that is determined to be cost-effective, based on whether the cost-effectiveness ratio is greater than 0.85, or 0.5 for emerging technologies.[13] Market potential reflects the subset of economic potential that we could expect customers to adopt "in response to specific levels of incentives and assumptions about policies, market influences, and barriers."[14] D.15-10-028, which established post-2015 energy savings goals, discusses at length our reasons for using market potential as opposed to economic potential for setting goals.[15] Those reasons remain valid and we have no basis to deviate from past practice in this decision.

D.15-10-028 also articulated the objective of developing realistic goals for the program administrators to achieve and for the CEC and other relevant entities to reasonably rely on for resource planning purposes. D.15-10-028 states:

> Setting unrealistic goals for ratepayer-funded programs gives other governmental entities and market actors bad information for use in their own EE activities. Misplaced reliance on overoptimistic forecasts can lead to misallocated resources and reduced activity by other actors, to ratepayers' and to the environment's detriment. It can also compound the internal and external pressure to claim success regardless of

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Energy Efficiency Savings Goals and Approving 2015 Energy Efficiency Programs and Budgets (Concludes Phase I of R.13-11-005), issued October 24, 2014, pp. 15-16; D.12-05-015 Decision Providing Guidance on 2013-2014 Energy Efficiency Portfolios and 2012 Marketing, Education, and Outreach, issued May 8, 2012, at 81.

[13] This decision does not address cost-effectiveness substantively, but refers heavily to cost-effectiveness terminology and assumes a basic level of familiarity with the Commission's cost-effectiveness framework for demand-side / distributed energy resources. Commission Staff have made informational resources regarding the Commission's cost-effectiveness framework available on the Commission's website, http://www.cpuc.ca.gov/General.aspx?id=5267.

[14] The post-2017 potential and goals study includes one new type of potential, which is a subset of market potential and represents the amount of potential savings from bringing "below-code" equipment up "to-code". We discuss this below-code potential further in this section.

[15] D.15-10-028 Decision Re Energy Efficiency Goals for 2016 and Beyond and Energy Efficiency Rolling Portfolio Mechanics, issued October 28, 2015, at 11-17.

> real-world program impact. Finally, it can lead other actors to discount the validity of the Commission's EE savings forecasts in their planning activities, thereby rendering the Commission's goal-setting far less useful than if the Commission is realistic in the first instance.
>
> Accordingly, as in D.14-10-046, we will set a single set of goals. That single set of goals will be "aggressive yet achievable," and will rest on data-based assumptions.

In terms of what is realistic, past decisions have adopted goals based not only on cost-effectiveness (economic potential) but also on reasonable assumptions regarding whether customers will in fact adopt a given technology (market potential). These assumptions are informed by evaluations of the extent to which past programs succeeded in increasing customer adoption beyond the level that would have otherwise occurred.

Another closely related standard we have used for setting goals is that they should be "aggressive yet achievable," reflecting our intent to both provide reliable estimates of energy savings for resource planning purposes, as well as to set ambitious expectations for ratepayer-funded programs.[16]

SB 350 directs the Commission, and the CEC, to consider energy efficiency potential studies that are not restricted by past levels of savings.[17] While this direction would seem to conflict with our intent to set realistic, aggressive yet achievable goals,[18] it is also constrained by the mandate, again in SB 350, to set goals based on feasibility, cost-effectiveness and having no adverse public health and safety impacts.[19]

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[16] D.07-09-043 Interim Opinion on Phase 1 Issues: Shareholder Risk/Reward Mechanism for Energy Efficiency Programs, issued September 25, 2007, at 26, 108.

[17] Cal. Public Resources Code § 23510(c)(4): "In assessing the feasibility and cost-effectiveness of energy efficiency savings for the purposes of paragraph (1), the commission and the Public Utilities Commission shall consider the results of energy efficiency potential studies that are not restricted by previous levels of utility energy efficiency savings."

[18] D.07-09-043, at 108.

[19] Cal. Public Resources Code § 25310(c)(1).

2.2. Accuracy and Consistent Valuation of Distributed Energy Resources

We must also acknowledge another policy mandate in SB 350, for the Commission to adopt a process for all jurisdictional load serving entities to submit integrated resource plans that "identify a diverse and balanced portfolio of resources needed to ensure a reliable electricity supply that provides optimal integration of renewable energy in a cost-effective manner."[20] A necessary component of portfolio optimization is consistent valuation of all resources, so that load serving entities and the Commission can consider the least-cost mix of resources that meet, among other objectives, the electricity sector's GHG emissions reduction targets to be established by the CARB. Consistent valuation of clean energy resources is a key focal point of both R.16-02-007 (Integrated Resource Plan, or IRP) and the IDER proceeding.

2.3. Comments on the Draft Study and Goals

To update energy efficiency goals, Commission Staff secured the services of Navigant and conducted a series of activities, many under the auspices of the Demand Analysis Working Group (DAWG). The Commission's website provides a summary of the meetings that occurred, and topics discussed at each meeting, in the preparation of the draft Potential Study.[21] On June 15, 2017, the assigned ALJ issued a ruling in this proceeding to invite formal comments on the draft Potential Study.

The draft Potential Study includes energy efficiency savings potential estimates resulting from five different scenarios:

1. Total Resource Cost (TRC) Reference, or "TRC Reference," which uses the current Avoided Cost Calculator (reflecting avoided cost values adopted in 2016) as the cost-effectiveness screen for determining economic potential.

[20] Cal. Pub. Util. Code § 454.51.

[21] 2018 Potential & Goals Study, http://www.cpuc.ca.gov/General.aspx?id=6442452619.

2. A modified TRC (mTRC) that uses the current Avoided Cost Calculator and includes a GHG adder based on the CARB Cap-and-Trade APCR Price, or "mTRC (GHG Adder #1) Reference."
3. A mTRC that uses the current Avoided Cost Calculator and includes a GHG adder based on the IDER Staff Proposal, which is in turn based on the preliminary RESOLVE model results developed in the Integrated Resource Planning proceeding, R.16-02-007.[22] The study refers to this scenario as "mTRC (GHG Adder #2) Reference."
4. Program Administrator Cost (PAC) Reference, or "PAC Reference," which uses the current Avoided Cost Calculator.
5. "PAC Aggressive," which uses the current Avoided Cost Calculator and assumes an enhanced level of program engagement.[23]

The June 15, 2017 ruling also invited parties to comment on whether to adopt cumulative savings goals.

On July 7, 2017, the following parties filed and served opening comments on the draft Potential Study: Association of Bay Area Governments on behalf of Bay Area Regional Energy Network (BayREN), California Energy + Demand Management Council (CEDMC), Natural Resources Defense Council (NRDC), the Office of Ratepayer Advocates (ORA), PG&E, SDG&E, SCE, SoCalGas, County of Los Angeles on behalf of the Southern California Regional Energy Network (SoCalREN), and The Utility Reform Network (TURN).

On July 14, 2017, the following parties filed and served reply comments: CEDMC, National Association of Energy Service Companies (NAESCO), NRDC,

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[22] The RESOLVE model is a capacity expansion model, based on linear programming techniques, used to identify least-cost portfolios of future resources that satisfy the multiple state policy goals required by the Integrated Resource Planning statute, including reducing greenhouse gas emissions and maintaining reliability.

[23] The TRC Test measures the net costs of a demand-side management program as a resource option based on the total costs of the program, including both the participants' and the program administrator's costs. The PAC Test measures the net costs of a demand-side management program as a resource option based on the costs incurred by the program administrator (including incentive costs) and excluding any net costs incurred by the participant.

PG&E, SCE, SoCalREN, and the County of Ventura on behalf of the Tri-County Regional Energy Network (3C-REN).

We address those comments here, according to the two general issue areas for which we invited comments – scenarios and cumulative savings goals -- and additional issues raised by parties.

2.3.1. Scenarios

The June 15, 2017 ruling invited parties to comment on the scenarios included in the draft Potential Study (referred to as the "Navigant Study" in the ruling). The ruling invited responses to the following questions:

1. Commission staff proposed five scenarios that attempt to capture a reasonable range of energy efficiency potential for 2018-2030.
   a. The Navigant study includes two scenarios considering a GHG adder to the 2016 Avoided Cost to screen measures for Economic Potential. Is it appropriate to use a GHG adder in the 2016 Avoided Cost? Why or why not?
   b. If you agree it is appropriate to use a GHG adder: which GHG adder value – either in the Navigant study or an alternative recommendation – is most appropriate to inform the 2018-2030 IOU energy efficiency goals? Please justify your recommendation.
   c. The Navigant study includes two scenarios using the PAC to screen measures for Economic Potential. Is it appropriate to consider energy efficiency goals based on the PAC? Why or why not?
   d. Which scenario – either in the Navigant study or an alternative recommendation – is most appropriate to inform 2018-2030 goals? Please justify your recommendation.
   e. If the Commission, in R.14-10-003, does not formally adopt (or otherwise reach a determination on) the interim valuation of costs to meet 2030 GHG reduction goals (GHG Adder) before the need in this proceeding to adopt 2018-2030 goals, does your recommendation change? If so, which scenario would you recommend the Commission use as basis for adopting 2018-2030 goals? Please justify your recommendation.

2.3.1.1. Positions of the Parties

2.3.1.1.1. Whether to Adopt Goals Based on a GHG Adder

SCE, SoCalGas and SDG&E do not explicitly oppose the use of a GHG adder, but recommend adopting goals that do not reflect any additional value for avoided GHG emissions, beyond the value that is embedded in the current Avoided Cost Calculator. These parties all observe that the draft Potential Study results do not reflect or indicate a potential disruption to the energy efficiency market, for which the Staff Proposal expresses concern. SCE asserts that "[a]pplying any interim value for [energy efficiency] is unnecessary and will continue to use divergent resource value streams that the IDER and IRP proceedings were established in part to standardize."[24] SCE further notes that "decreases in market potential created by the updated 2016 avoided cost [sic] are offset through new approaches, including expanded behavioral, retrocommissioning and operational offerings as well as a small amount of stranded potential."[25] SoCalGas states that large increases in spending require additional review through the IRP process "so that the benefits of GHG reduction are not exaggerated and that customers do not overpay for [energy efficiency] resources."[26] SDG&E states it is reasonable to delay incorporation of a GHG adder, not only to allow the Commission to consider the Staff Proposal in R.14-10-003, but also to allow time to assess demand for energy efficiency programs and Business Plan activities.

ORA reserves judgment on whether the Commission should incorporate a GHG adder, but in the event that the Commission determines to do so, ORA cautions against

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[24] R.13-11-005 Southern California Edison Company's (U 338-E) Comments on Administrative Law Judge's Ruling Inviting Comments on Draft Potential and Goals Study, filed July 7, 2017 (SCE opening comments) at 2.

[25] *Ibid*. at 2.

[26] R.13-11-005 Opening Comments of Southern California Gas Company (U 904 G) on Administrative Law Judge's Ruling Inviting Comments on Draft Potential and Goals Study, filed July 7, 2017 (SoCalGas opening comments) at 2.

using a value that is "subject to factual dispute," with reference to the IDER Staff Proposal and to ORA's support for the IOU-proposed value reflecting the CARB Cap-and-Trade APCR Price.[27]

Nearly all other parties that submitted comments express support for a GHG adder, more specifically for accounting for the value of avoided GHG emissions consistent with the State's 2030 GHG reduction target. PG&E, SoCalREN and TURN recommend that the Commission base the GHG adder on the CARB Cap-and-Trade APCR Price. PG&E supports the inclusion of a GHG value, consistent with the Joint IOUs' recommendation in the IDER proceeding, "to acknowledge that the 2016 Avoided Cost update did not take into account SB 32's 2030 GHG reduction targets."[28] SoCalREN supports inclusion of a GHG adder but, like ORA, cautions against the preliminary results of the RESOLVE model ("GHG Adder #2"), arguing that using this value "could expose portfolios to a large jump in increasing values between 2021 and 2030 ... causing instability in budgets and programs over time."[29] TURN explains that the Avoided Cost Calculator "does not accurately represent the reasonably anticipated costs of mitigating GHG emissions subject to limits prescribed by state law (SB 32). The calculator includes a lower cost of GHG emissions, limited to the carbon allowance price embedded in future energy prices."[30] PG&E and SCE highlight this same point, i.e., that

[27] R.13-11-005 Opening Comments of the Office of Ratepayer Advocates on the Administrative Law Judge's Ruling Inviting Comments on Draft Potential and Goals Study, filed July 7, 2017 (ORA opening comments) at 2.

[28] R.13-11-005 Comments of Pacific Gas and Electric Company (U 39 M) Regarding Energy Efficiency Potential and Goals for 2018 and Beyond in Response to Administrative Law Judge's Ruling Dated June 15, 2017, filed July 7, 2017 (PG&E opening comments), at 3.

[29] R.13-11-005 Comments of the County of Los Angeles, on Behalf of the Southern California Regional Energy Network (CPUC #940), on Administrative Law Judge's Ruling Inviting Comments on Draft Potential and Goals Study, filed July 7, 2017 (SoCalREN opening comments), at 4.

[30] R.13-11-005 Comments of The Utility Reform Network Responding to the Administrative Law Judge's Ruling Inviting Comments on Draft Potential and Goals Study for 2018 and Beyond, filed July 7, 2017 (TURN opening comments), at 3.

a value for avoided GHG emissions already exists in the current Avoided Cost Calculator and the relevant question the Commission should consider is whether to adopt an alternative value – not an adder on top of the existing value. PG&E further states that the Commission should make any further necessary adjustments to the Avoided Cost Calculator to ensure against overestimating the value of GHG reductions from energy efficiency, including avoided Renewable Portfolio Standard values.

BayREN, CEDMC, NAESCO, NRDC, 3C-REN also support consideration of a GHG adder, as well as alternative tests and/or scenarios to inform the Commission's decision on post-2017 goals.

BayREN suggests that the Potential Study incorporate the Societal Cost Test and GHG adder that is currently under development in the IDER proceeding (i.e., the Staff Proposal). BayREN argues that "GHG emissions and societal benefits must be accounted for so that the Study can provide [program administrators] and stakeholders a more accurate framework to determine what kind of programs and activities should be undertaken to achieve State goals."[31]

CEDMC "urges" the Commission to adopt goals based on the PAC test, under the Aggressive scenario and with a GHG adder, stating that "even savings under the PAC Aggressive scenario are insufficient to meet a doubling of energy efficiency under SB 350."[32] CEDMC does not identify a specific GHG adder value to use, though it refers to the Staff Proposal. CEDMC requests that the study include four more scenarios, based on the PAC test (Reference and Aggressive), with both the GHG Adder #1 (Cap-and-Trade APCR Price) and the GHG Adder #2 (RESOLVE preliminary results).

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[31] R.13-11-005 Comments of the Association of Bay Area Governments, on Behalf of the San Francisco Bay Area Regional Energy Network (CPUC #940) to ALJ's Ruling Regarding Draft Potential and Goals Study, filed July 7, 2017 (BayREN opening comments) at 3.

[32] R.13-11-005 Comments of the California Efficiency + Demand Management Council on Administrative Law Judge's Ruling Inviting Comments on Draft Potential and Goals Study, filed July 7, 2017 (CEDMC opening comments) at 8.

NAESCO supports CEDMC's recommendation for additional scenarios based on the PAC and argues that "even these scenarios, in NAESCO's opinion, seriously underestimate the potential for available cost-effective [energy efficiency] in California."[33] NAESCO cites the American Council for Energy-Efficient Economy's 2016 State Energy Efficiency Scorecard, which shows electricity savings in California lower than in Massachusetts, reasoning that this difference is due in part to per capita spending on energy efficiency that is 43 percent less in California than in Massachusetts.

NRDC takes issue with recommendations to use the CARB Cap-and-Trade APCR Price, citing the basis for those recommendations as the reasonableness of the Cap-and-Trade APCR Price and, related, that the Cap-and-Trade APCR Price reflects an accurate value of the abatement cost of carbon. NRDC instead supports the use of the GHG adder value proposed in the Staff Proposal, arguing that this value represents the electric sector's share of costs to comply with state GHG reduction policy. While acknowledging the arguments by some parties in R.14-10-003 that the RESOLVE model and its inputs have not been vetted publicly, NRDC asserts that "CPUC Staff have conducted due diligence on RESOLVE."[34]

Without identifying a specific GHG adder value, 3C-REN states that adopting a GHG adder "will provide for a more accurate framework to best determine the type of activities and programs needed to meet statewide goals."[35]

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[33] R.13-11-005 Reply Comments of the National Association of Energy Service Companies (NAESCO) on the Comments of Other Parties on the Draft Potential and Goals Study, filed July 14, 2017 (NAESCO reply comments) at 3.

[34] R.13-11-005 Reply Comments of the Natural Resources Defense Council (NRDC) on the Administrative Law Judge's Ruling Inviting Comments on the Draft Potential and Goals Study, filed July 14, 2017 (NRDC reply comments) at 3.

[35] R.13-11-005 Reply Comments of County of Ventura on Behalf of the Tri-County Regional Energy Network on Comments to ALJ's Ruling Inviting Comments on Draft Potential and Goals Study, filed July 14, 2017 (3C-REN reply comments) at 3. 3C-REN goes on to argue that "[t]aking only cost-effectiveness into account leads to program design consisting of quick, low-cost delivery and easy market penetration resulting in the hard to reach markets being unable to take advantage of programs and

Footnote continued on next page

2.3.1.1.2. Whether to Adopt a GHG Adder in Advance and Outside of the Integrated Distributed Energy Resources Proceeding, R.14-10-003

The question of whether parties' recommended scenario changes, based on the outcome of R.14-10-003, is only relevant to parties who agree that the Commission should adopt goals based on a value under consideration in R.14-10-003. Those parties are BayREN, CEDMC, NAESCO, NRDC, PG&E, SoCalREN, and TURN. Of those parties, four explicitly address the question and three elaborate on their response.

PG&E responds, "the Commission should not adopt an alternative cost-effectiveness treatment that would be inconsistent with what has been adopted in the IDER. Once a decision in IDER is available, it would be reasonable for the Commission to update the energy efficiency potential study and subsequently, if appropriate, the efficiency goals for 2018 and 2019."[36]

TURN, which recommends the same GHG adder value as PG&E, disagrees, reasoning that "the current avoided cost calculator undervalues [energy efficiency] by including lower costs associated with mitigating GHG emissions than can be reasonably anticipated based on current law. Thus, adopting a GHG adder to correct for this inaccuracy in determining [energy efficiency] economic potential is consistent with the mandates of California Public Utilities Code Sections 454.55 and 454.56…"[37]

SoCalREN agrees with TURN, noting that "the update [of the Avoided Cost Calculator] occurred prior to the adoption of Senate Bill (SB) 32 and, therefore, did not reflect the cost impacts of 2030 GHG targets now in state law."[38]

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services," however cost-effectiveness requirements for energy efficiency portfolios is not at issue in this decision. Presumably 3C-REN intends to assert that considering only non-GHG avoided costs leads to sub-optimal program design.

[36] PG&E opening comments, at 6.

[37] TURN opening comments, at 9.

[38] SoCalREN opening comments, at 3.

2.3.1.1.3. Use of the Program Administrator Cost Test to Set Goals

SCE, SoCalGas, and TURN all note the "mismatch" with the way that the Commission evaluates and determines portfolio cost-effectiveness (i.e., using both the PAC and the TRC) that would result if the Commission were to base economic potential on the PAC test. Therefore, if the Commission opts to set goals based on the PAC, these parties argue that the Commission should also revise its policy regarding portfolio cost-effectiveness requirements to also be based on the PAC.

CEDMC agrees that the portfolio cost-effectiveness test would need to be updated, stating that a "policy update to utilize the PAC test, with goals under the PAC Aggressive scenario, is the appropriate path to 2030 goals."[39]

PG&E also supports consistency among goal-setting, portfolio evaluation and resource planning, but recommends that the Commission continue to assess cost-effectiveness from the TRC perspective.

PG&E and SoCalREN both highlight the importance of considering all ratepayer costs – both participant and non-participant (through revenues collected by the IOUs and used by the program administrators to administer energy efficiency programs) – to evaluate the cost-effectiveness of energy efficiency measures.

Although PG&E supports continued use of the TRC, it suggests there may be a need to "address cost issues in the TRC test that are unique to energy efficiency. These involve accounting for participant costs that are unrelated to energy savings and that customers incur for other reasons," with reference to a "Joint IOUs proposal" in the IDER proceeding and to its proposal in the business plan applications proceeding to

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[39] R.13-11-005 Reply Comments of the California Efficiency + Demand Management Council on Administrative Law Judge's Ruling Inviting Comments on Draft Potential and Goals Study, filed July 14, 2017 (CEDMC reply comments), at 6.

estimate the amount of program-related costs that participants incur for non-program related benefits, such as comfort and aesthetic gratification.[40]

ORA opposes the use of the PAC Aggressive scenario as that scenario relies, ORA alleges, on an unrealistic set of assumptions. More specifically, ORA elaborates, the increases in electric and gas potential (23 and 57 percent, respectively) are not commensurate with the increased expenditure (more than 100 percent) required to achieve those additional savings. NAESCO takes issue with ORA's assertion, arguing that "this conclusion is constrained by past program performance," and "the cost-effectiveness of future incentive programs will also be significantly enhanced when the ratepayer-funded programs recognize all energy savings, not just above-code savings, as mandated by AB 802."[41]

SDG&E does not recommend use of the PAC test to set energy savings goals "because customer costs are a critical consideration influencing customer demand" and, SDG&E asserts, it is not clear whether the study assumes constant customer demand as potential increases, implying that customer demand is not constant for all levels of savings potential.[42] In reply comments, NRDC counters SDG&E's suggestion that the economic potential screen should account for customer willingness to adopt by explaining that "[o]nce a measure qualifies as a programmatic offering [after it has passed the cost-effectiveness screen], a customer adoption model is then applied to this cost-effective measure ... the GHG adder does not impact the measure's payback period and does not impact the customer adoption algorithm for a measure."[43]

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[40] PG&E opening comments, at 4.

[41] NAESCO reply comments, at 6.

[42] R.13-11-005 San Diego Gas & Electric Company (U 902-M) Comments on Draft Potential and Goals Study, filed July 7, 2017 (SDG&E opening comments), at 7.

[43] NRDC reply comments, at 4.

NRDC asserts that the PAC test with a GHG adder is the most appropriate scenario on which to base energy efficiency goals. NRDC argues that the PAC test is appropriate because the current IRP process uses the PAC to determine the lowest cost path – including both supply-side and demand-side resources -- to comply with state GHG reduction policy.

2.3.1.2. Discussion

As most parties acknowledge, while the 2016 update to the Commission's Avoided Cost Calculator -- specifically updates to the price of natural gas -- would decrease the cost-effectiveness of traditional energy efficiency programs, it does not reflect the value, or added benefit, of avoided GHG emissions pursuant to 2030 GHG reduction targets enacted in SB 32. Furthermore, we anticipate that the IDER proceeding will incorporate additional updates to the Avoided Cost Calculator to include a GHG adder and possibly other elements of the Staff Proposal (for a societal cost test) in the coming year. In that regard, if we did not incorporate a GHG adder here, we could potentially see a lower estimate of cost-effective energy efficiency programs over the next year, only to be followed by a potential increase in cost-effective energy efficiency if and when the IDER proceeding adopts a GHG adder. To provide more consistent guidance to the market and to be consistent with our intent to evaluate cost-effectiveness accurately, we find it is appropriate to adopt goals based on a scenario that incorporates such a GHG adder until the IDER proceeding makes further updates to the Avoided Cost Calculator. Of course, in the event that the IDER proceeding does not adopt a GHG adder or other elements of the Staff Proposal, future updates to energy efficiency potential and goals studies should reconcile any misalignment with the Commission's cost-effectiveness framework.

The next issue to determine is which value is most appropriate to forecast the added value of GHG emissions reduction, or GHG adder. We have already stated our intent to value energy efficiency consistently for all distributed energy resources, therefore our preference is to use a value that the Commission has found to be appropriate in the IDER proceeding.

We adopt goals based on a GHG value that reflects the CARB Cap-and-Trade APCR Price. The question of this value's accuracy is more appropriately in the scope of the IDER rulemaking, but we note that the record there indicates this is the most reasonable value to use on an interim basis. Based on the record in that proceeding, the Commission proposed to adopt this value as an interim GHG adder, for the specific purpose of updating energy efficiency goals.

The Commission has adopted an interim GHG adder, based on the CARB Cap-and-Trade APCR Price, stating "[T]here is insufficient evidence in the record to determine if the Cap-and-Trade APCR Price can be equated with a marginal carbon abatement price.[44] However, because it represents the highest cost of compliance with California's cap and trade requirements, the Cap-and-Trade APCR Price is the best interim value currently available to approximate the societal costs of greenhouse gas emissions."[45]

Because D.16-06-007 specifies that "[a] single avoided cost model should apply to all distributed energy resource proceedings,"[46] we should now incorporate the CARB Cap-and-Trade APCR Price into our assessment of energy efficiency cost-effectiveness.

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[44] The final Potential Study, attached as Appendix 1 to this proposed decision, includes a corresponding adjustment to the avoided RPS value, which Navigant anticipated the Commission would authorize in the IDER proceeding. Since the IDER proceeding did not authorize an adjustment to the avoided RPS value, Commission Staff may direct Navigant to remove this adjustment to the avoided RPS value in response to comments to this proposed decision.

[45] *See* results of August 24, 2017 Commission meeting: http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M194/K678/194678538.PDF.

[46] D.16-06-007 Ordering Paragraph 1.h.

The final issue to address, with respect to which scenario to base energy efficiency goals on, is the appropriateness of the PAC or other scenarios not included in the draft Potential Study.

We decline to adopt goals based on the PAC or similarly more aggressive scenarios (than the TRC), for multiple reasons.

First, we agree with parties who argue that the Commission should revise its portfolio cost-effectiveness requirements if it chooses to adopt goals based on the PAC. The question of whether to eliminate the TRC from portfolio cost-effectiveness requirements is beyond the scope of this decision; parties should have adequate opportunity to argue the merits of such a significant change to energy efficiency cost-effectiveness policy, if the Commission were to consider such a change. Moreover, such a change is more appropriately within the scope of the IDER rulemaking, given the Commission's emphasis on consistent valuation of distributed energy resources. We also note that the Commission Staff analysis in the Commission's Integrated Resources Plan rulemaking, R.16-02-007, also relies primarily on resource cost-effectiveness based on the TRC (not on the PAC, as NRDC states in opening comments).[47]

Second, we acknowledge that SB 350 directs the Commission to consider the results of energy efficiency potential studies that are not restricted by previous levels of utility energy efficiency savings, and for this reason Staff directed Navigant to include scenarios that reflect only the program administrator's costs and that further assume aggressive efforts at program engagement. What the Potential Study shows is that, for about 72 percent (Reference) and over 125 percent (Aggressive) additional expenditures

[47] *See* Preliminary RESOLVE Modeling Results for Integrated Resource Planning at the CPUC, CPUC Energy Division presentation during July 19, 2017 workshop in R.16-02-007. Retrieved from California Public Utilities Commission website: http://www.cpuc.ca.gov/uploadedFiles/CPUCWebsite/Content/UtilitiesIndustries/Energy/EnergyPrograms/ElectPowerProcurementGeneration/irp/17/CPUC_IRP_Preliminary_RESOLVE_Results_2017-07-19_final.pdf (as of August 8, 2017), page/slide 34.

in the short term and 37 percent and 88 percent in 2030 (compared to the TRC Reference scenario), the PAC scenarios show only 25 to 36 percent more savings in the short term to about nine percent (Reference) and 51 percent (Aggressive) in 2030, with similar performance for gas. This exercise shows, in general terms, diminishing returns for the PAC and large increases in projected expenditures. Choosing this scenario would be inconsistent with both the Commission's responsibility to authorize prudent long-term investments on behalf of ratepayers.

Third, we disagree with those arguments for more aggressive goals based exclusively or primarily on the need to achieve the so-called doubling goals articulated in SB 350.[48] To be clear, this is entirely separate from our intention for energy efficiency program administrators and implementers to strive to execute all cost-effective, innovative programs that target deeper savings; this is our central focus in the current rolling portfolio business plans proceeding, Applications (A.) 17-01-013 et al. But comments advocating that the Commission adopt goals based on the scenario that estimates the highest savings, solely in order to reach SB 350's doubling goals, neglect the important work that the CEC is currently conducting to develop *targets* based on a goal of doubling energy efficiency "to the extent doing so is cost effective, feasible, and will not adversely impact public health and safety."

It is worthwhile then to make clear the sequence of activities among this (post-2017) potential study, the CEC's work on doubling targets, and future potential studies: First, the Commission adopts post-2017 goals, based on cost-effectiveness and a deliberate intent to provide realistic estimates for resource planning purposes. Then, the

[48] SB 350 requires the CEC to set annual targets "that will achieve a cumulative doubling of statewide energy efficiency savings...by January 1, 2030," based upon "the midcase estimate of additional achievable energy efficiency savings, as contained in the California Energy Demand Forecast, 2015-2025... to the extent doing so is cost effective, feasible, and will not adversely impact public health and safety. Some comments characterize this as an absolute doubling of energy efficiency, which is technically imprecise.

CEC utilizes the Commission's adopted goals as inputs to its determination of annual targets, pursuant to SB 350's doubling goal (this will constitute the targets for the IOUs for SB 350). According to the CEC draft staff paper for setting these targets, the CEC will also estimate some amount of enhanced/expanded savings (as well as non-IOU related savings such as Property Assessed Clean Energy, benchmarking, Codes & Standards), which also must be cost-effective, feasible, and not adversely impact public health and safety.[49]

Following the CEC's adoption of doubling targets, improving program efficiency and developing new approaches (third party, market transformation, etc.) can lead to increased savings, which ultimately could enable the program administrators to contribute to closing the "gap between the likely savings from utilities...and the cumulative doubling goal."[50] But the programs must invariably meet the Commission's cost-effectiveness requirements. We do not expect that program administrators will double past performance, cost-effectively, absent new program designs and delivery strategies, many of which have yet to be proposed or implemented, and which are the subject of the rolling portfolio business plan applications. We also emphasize here that the goals adopted in this decision are a floor; if IOUs and other program administrators can develop strategies for deeper savings, we expect to count those towards the doubling goal.

Finally, we confirm that this proceeding is not the appropriate venue for resolving disputes regarding the reasonableness of the specific inputs to the RESOLVE model.

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[49] Giyenko, Elena, Cynthia Rogers, Michael Jaske, and Linda Schrupp. 2017. *Senate Bill 350 Energy Efficiency Target Setting for Utility Programs* ("draft staff paper"). California Energy Commission. Publication Number: CEC-200-2017-005-SD. Retrieved from the California Energy Commission website: http://docketpublic.energy.ca.gov/PublicDocuments/17-IEPR-06/TN220290-1_20170721T093759_Senate_Bill_350_Energy_Efficiency_Target_Setting_for_Utility_Pr.pdf (as of August 8, 2017).

[50] *Ibid.* at 32.

Although the value coming out of the RESOLVE model *may* represent the best available valuation of GHG societal costs, that process will not conclude before the need in this proceeding to adopt goals in time for the CEC to appropriately discharge its load forecasting and target-setting responsibilities.

2.3.2. Cumulative Goals

Regarding cumulative goals, the June 15, 2017 ruling asked for responses to the following questions:

1. Cumulative goals: The Commission ordered in D.16-08-028 the consideration of cumulative goals if methods were developed. Commission staff worked with the DAWG to develop a method to propose cumulative savings, but was unsuccessful in identifying suitable approaches to inform this decision. Do you recommend that the Commission still adopt cumulative goals for 2018-2030? Why or why not? If you recommend that the Commission adopt cumulative goals:
    a. Should goals start to accumulate in 2018? Why or why not?
    b. How should the Commission deal with under/over achievement of cumulative goals?
    c. Persistence and decay are calculated based on participation informed by the Navigant Analytica model. Do you agree that cumulative goals are informed by this method? Why or why not?

2.3.2.1. Positions of the Parties

All parties responding to this question, except SCE, recommend against adopting cumulative goals at this time.[51]

Both ORA and TURN recommend that the Commission look to the CEC for development of a method to quantify cumulative goals, which SB 350 requires the CEC to conduct. ORA and TURN also recommend that, in the interim, the Commission should require the program administrators to include net lifecycle savings as a metric as

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[51] BayREN, CEDMC, NAESCO, NRDC and 3C-REN did not provide comments in response to Question 2 of the June 15, 2017 ruling.

part of their Business Plan metrics in A.17-01-013 et al. TURN further recommends that the Commission adopt annual first year net goals.

PG&E and SoCalGas assert that a reasonable method to account for decay has not been established.[52] However, PG&E goes on to recommend that the Commission consider "the impacts of decay in planning contexts, but not in setting IOU goals," which would seem to negate its concern about the lack of a reasonable method to calculate decay.[53] SDG&E recommends further discussion to develop cumulative goals, and "urges the Commission to work to inform a complete understanding of cumulative goals and how those can be achieved, specifically given budgetary constraints."[54] Similarly, SoCalREN suggests the need for workshops "to have a deeper discussion in regards to cumulative vs. annual."[55]

SCE recommends that the Commission adopt cumulative goals for 2018-2030, stating that cumulative goals are consistent with the state's legislative goals and energy efficiency program goals. SCE is indifferent as to the specific start year "as long as the start year for [energy efficiency] program goals and [energy efficiency] programs savings/achievement is aligned."[56] Further, SCE recommends that the Commission allow the program administrators to carry market potential over/under achievements forward to allow flexibility and to reward overachievement. SCE states the decay for rebate programs is reasonably addressed in the potential and goals model. In reply comments, SCE adds that the CPUC and CEC have distinct roles; the CPUC is responsible for

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[52] The Commission's Energy Efficiency Policy Manual (Version 5, July 2013) defines savings decay as "[t]he reduction of cumulative savings due to previous measure installations passing their Remaining Useful Life or Effective Useful Life. Per D.09-09-047 and until EM&V results inform better metrics, IOUs may apply a conservative deemed assumption that 50% of savings persist following the expiration of a given measure's life."

[53] PG&E opening comments, at 9.

[54] SDG&E opening comments, at 8.

[55] SoCalREN opening comments, at 6.

[56] SCE opening comments, at 6.

adopting goals and targets, and the CEC for forecasting load, "which takes into account [energy efficiency] program goals." Therefore, SCE asserts, "the Commission should not defer setting cumulative [energy efficiency] saving goals to the CEC." Nevertheless, SCE acknowledges that SB 350 directs the CEC (not the CPUC) to "establish annual targets for statewide energy efficiency savings in electricity and natural gas final end uses of retail customers."[57]

2.3.2.2. Discussion

Given the CEC's responsibilities with respect to setting targets pursuant to SB 350, and its need to develop a means for estimating cumulative savings, we find it reasonable to refrain from adopting cumulative goals and instead defer such adoption until Commission Staff can assess the feasibility and reasonableness of using the methodology to be developed by the CEC, after it has been developed, for the purpose of setting cumulative goals.

In the meantime, ORA and TURN's recommendation for the program administrators to measure and set targets for net lifecycle savings is a reasonable alternative, given our determination in D.16-08-019 to focus on long-term savings.

No parties objected to ORA and TURN's recommendation. We note that both ORA and TURN have repeated this recommendation in their opening comments on the revised sector-level metrics in the current business plan applications proceeding.[58] Based on the record in that proceeding, the Commission will determine whether to require the program administrators to set targets for, track and report on net lifecycle savings.

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[57] R.13-11-005 Southern California Edison Company's (U 338-E) Reply Comments on Administrative Law Judge's Ruling Inviting Comments on Draft Potential and Goals Study, filed July 14, 2017 (SCE reply comments), at 2.

[58] A.17-01-013 et al. Opening Comments of the Office of Ratepayer Advocates on the Administrative Law Judge's Ruling Seeking Comment on Energy Efficiency Business Plan Metrics and the Administrative Law Judge's Ruling Requesting Comments on Energy Efficiency and Demand Response Integration Options, filed July 24, 2017, at 5-6; and Comments of The Utility Reform Network on the Program Administrators' Revised Sector Metrics, filed July 24, 2017, at 2-3.

2.3.3. Other Issues

Parties raised a number of additional recommendations in their comments. Parties' recommendations can be generally characterized as either suggesting technical corrections, e.g., revisions to some aspect of the study's assumptions or data sources, or more substantive suggestions, e.g., suggesting a change to the scope or the policy reflected in the study. Navigant has made technical corrections in the final draft in response to some parties' comments, and included responses to each technical comment explaining whether and why it is appropriate and feasible (or not) to incorporate into the final draft of the post-2017 Potential Study. We address parties' more substantive recommendations here.

2.3.3.1. Correction for Discrepancies in Lighting

PG&E notes that a particular type of compact fluorescent light (CFL) specialty lamps constitutes an unexpectedly high proportion of savings in PG&E's rebate program portfolio, given that the draft Potential Study states that the Energy Independence and Security Act of 2007 standards should apply (and therefore such savings should not be included in the savings estimates).

Similarly, PG&E believes the potential for light-emitting diode (LED) lighting is high given Staff's 2017 Comprehensive Screw-in Lamp Workpaper Disposition (issued May 26, 2017).

Navigant clarifies now that a federal rulemaking, which concluded that most specialty lamps will be subject to the EISA standard, remained pending at the time that Navigant had completed its measure characterization activities.[59] The federal rulemaking

[59] U.S. Department of Energy, Energy Efficiency and Renewable Energy Office, 2017-01-19 Energy Conservation Program: Energy Conservation Standards for General Service Lamps; Final rule in Docket number EERE-2013-BT-STD-0051, https://www.regulations.gov/document?D=EERE-2013-BT-STD-0051-0097.

concluded in January 2017, so it is appropriate now to adjust savings estimates for CFL specialty lamps.

The final draft of the Potential Study also addresses the LED baseline mix discrepancy with the 2017 Comprehensive Screw-in Lamp Disposition. Commission Staff, Navigant and the ex-ante review team discussed the issue and concluded that with rapid changes in the market and upcoming 2018 federal standards, the 2017 Comprehensive Screw-in Lamp Disposition would become outdated during the forecasted period. To account for the uncertainty in the future baseline mix, Navigant kept the current baseline in the study for gross savings and used the default Database for Energy Efficiency Resources (DEER) net to gross ratio for calculation of net savings. A more detailed discussion of the update can be found in Appendix I of the final Potential Study.

2.3.3.2. Inclusion of Financing Potential in Reference Scenarios

PG&E suggests that "it may be appropriate to include the savings potential modeled for financing in 2018 and beyond in the Reference cases," citing the 2013/14 On Bill Financing Program Impact evaluation and the fact that PG&E "anticipates claiming savings associated with OBF Alternative Pathway...and CAEATFA Financing Program. Additionally, PG&E will strive to account for savings attributable to financing coupled with rebate and incentives going forward."[60]

Including potential savings estimates from financing in the Reference scenarios is premature for this (post-2017) Potential Study. The financing programs remain relatively nascent and require a reliable method for savings quantification and attribution in order for the program administrators to claim savings. Once more data is available to evaluate

[60] PG&E opening comments, Appendix A at A-6.

the financing programs, the program administrators can offer proposals for savings claims, which (if approved) should inform future potential studies.

2.3.3.3. Energy Efficiency Potential Estimates for Non-IOU Program Administrators

BayREN raises a concern regarding the distribution of energy efficiency potential among the IOUs as opposed to a distribution by county, city or other jurisdiction. BayREN asserts that it "cannot be assigned goals based on the [Potential] study and cannot use the study to understand what opportunities and needs exist within BayREN's service area. The study needs to be more granular and should provide similar analysis for each of the program administrators currently operating in California."[61] 3C-REN supports BayREN's assertion that the Potential Study should present energy efficiency potential estimates by city, county or other jurisdiction in order to be useful to all program administrators (not just the IOUs).

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[61] BayREN opening comments, at 2.

While we agree that the Potential Study should be useful for all program administrators, and BayREN's request is within the scope of the potential study process, development of city-, county-, or other jurisdiction-level savings estimates requires additional data and modeling resources. The final Potential Study cannot adequately accommodate BayREN's request at this time. Staff should consider the necessary data collection and modeling in the scope of the next potential and goals study. All program administrators should actively participate in the early stakeholder development of future potential studies, to enable the consultant to properly scope the data collection and other necessary tasks from the outset.

2.3.3.4. Timing of Updates to Future Potential and Goals Studies

SCE recommends that the Commission adopt off-year updates to the potential and goals study, which would essentially change our bus stop approach from a two-year cycle to an annual one. SDG&E, on the other hand, states that "the study should be updated consistent with the needs of the [Integrated Energy Policy Report]," which we confirm is the process that D.15-10-028 adopted.[62]

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[62] SDG&E opening comments, at 7.

Although more frequently updated results could be useful for program administrators and implementers, the study development process itself is both time- and resource-intensive and therefore would be difficult to convert to an annual process. Future iterations of the study may become more automated, in which case implementing more frequent updates of at least some portion(s) of savings estimates might become feasible. However, the modeling requirements could also become more complex and/or expanded, or could take an entirely different path, in which case it would be prudent to maintain the current two-year work plan. We will not adopt SCE's recommendation for off-year updates now but may reevaluate the merits of this option for future studies.

2.3.3.5. Public Sector Market Potential

PG&E, SCE, and SoCalGas observe that the Commission has directed the program administrators to develop strategies targeted specifically at the Public sector, but the lack of potential savings estimates for this sector limit program administrators' ability to adequately fulfill the Commission's direction. In short, these parties recommend that the study include an analysis and savings estimates for Public sector market potential.

The data that is currently available for this study does not allow for an appropriate estimation of Public sector savings. At issue is the adequacy of data indicating either the number of customers or the amount of square feet needed to appropriately define the sector. We agree that such an analysis is useful and will direct the IOUs to collect the necessary data to inform future potential studies on Public sector market potential.

2.3.3.6. Low Income Savings and Potential

Several parties observe that the Potential Study does not reflect an analysis of low-income potential, and therefore it does not comply with California Public Resources Code § 25310(c)(4) and D.16-11-022. NRDC asserts that funds allocated for the low-income potential analysis required by D.16-11-022 be utilized to complete this analysis. "The potential should include a breakdown of end uses, equipment, and indicate how the energy costs for common areas and in-unit energy use are paid (through utility bills) by owners versus tenants. This would not only provide additional economic and market potential information in low-income multifamily buildings, but also enable improved program designs to capture all cost-effective energy efficiency in this sector."[63]

Parties did not request a different approach to estimating low income savings during the early development of this study. Development of this study could not take account of D.16-11-022 (adopted in November 2016) in its entirety, without jeopardizing the schedule for timely completion.[64] The next update of the potential and goals study will include a low-income potential analysis as required by D.16-11-022. Ultimately, however, the Energy Savings Assistance Program's proceeding adopts goals that may or may not be informed by this study.

2.3.3.7. Accuracy of Spending Estimates, Access to Uncalibrated Model

NRDC requests that the Commission require public access to the uncalibrated version of the potential and goals model, stating its concern that the model is not using the most recent publicly available data on energy efficiency program expenditure. To explain, NRDC notes that the model estimates 2018 expenditures between $400 million and $1 billion, while program administrators' reported 2016 expenses are approximately $650 million and their forecasted 2018 budgets are approximately $827 million. NRDC reasons that the "model calibration and forecasts should be aligned with this recent data for the TRC reference scenario since the Program Administrators proposed these budgets based on a cost-effective portfolio under the TRC test."[65]

We confirm that Navigant used budget data from the 2013-2015 program years, due to the lack of a complete 2016 dataset at the time Navigant started the calibration

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[63] NRDC opening comments, at 9.

[64] The Potential Study does quantify potential for retreatments, as ordered by D.16-11-022. *See* June 15, 2017 ruling, Appendix A, at 22, 73-74.

[65] NRDC opening comments, at 7.

task. However, the use of older budget data does not significantly impact the spending forecasts since expenditures were for the most part in line from 2013 to 2016, at approximately $650 million for resource programs. The way Navigant used expenditures was to check and make sure that the starting point of the forecasting was in line with where the market was (this is the purpose of calibration). Using the 2016 dataset would not have made any material difference, as the past trend was relatively flat.

We further clarify that the 2013-2016 budgets used older avoided cost assumptions and the forecasted scenarios use the 2016 update to the Avoided Cost Calculator. Therefore, we should expect that there is a difference between the forecast and actual spending, as the 2016 update reduced the valuation of benefits. Even though Navigant calibrates to old budgets to make sure the starting point of the forecast was in line with historical levels (to make sure the forecast is realistic), the actual forecast must use the updated avoided cost, which changed the number and type of measures that were cost-effective. The output of costs is a reflection of the new portfolio and should not necessarily be in line with historical spending since, after calibration, the model departs from the past and forecasts the future based on different parameters. Finally, we note that the simulated expenditure for the 2013-2015 period in the model is about $2,061 million (summed across all three years), which is relatively aligned with the $2,247 million that is reported on the Commission's energy efficiency data portal for that same 2013-2015 calibration period.[66]

Notwithstanding our response to NRDC's concerns regarding the validity of the budget data used in the Potential Study, in the interest of transparency Staff should assess and report to the DAWG on the feasibility of publishing the uncalibrated model for future potential and goals studies.

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[66] *See* http://eestats.cpuc.ca.gov/Views/EEDataPortal.aspx.

2.3.3.8. Recommendations Not Within Scope of the Potential and Goals Study Process

2.3.3.8.1. Avoided Cost Calculator updates

CEDMC recommends that the Commission direct Energy Division Staff to update the Avoided Cost Calculator (in the scope of R.14-10-003) as soon as feasible. NAESCO supports CEDMC's recommendation, and further asserts that the Avoided Cost Calculator should "recognize and quantify the meta risks affecting gas price volatility."[67]

Recommendations for modifying either the inputs or the timing of Avoided Cost Calculator updates should be addressed to the Commission in the IDER rulemaking, R.14-10-003 (or a successor proceeding).

2.3.3.8.2. Peak Period Definitions

PG&E recommends that peak savings values be updated to align with the 2016 Avoided Costs peak period assumptions, and not with the definition in the Commission's DEER database. PG&E argues that use of the DEER definition causes a discrepancy between measures pursued for cost-effectiveness and those pursued for peak reduction.

The peak definition discrepancy with avoided costs is in the scope of the DEER update, the most recent of which did not occur in time for incorporation into this (post-2017) Potential Study. The next update to the potential and goals study will align peak savings values with the then-current DEER database.

2.3.3.8.3. Alignment of Codes and Standards Evaluation Methods

PG&E, SCE and SoCalGas request that the Potential Study align its Codes and Standards evaluation method with the method used in the 2013-2015 Codes and

[67] NAESCO reply comments, at 5.

Standards Impact Evaluation, the final version of which the Commission recently posted to the California Measurement Advisory Council website.[68]

The final draft of the study aligns the Codes and Standards evaluation method with that of the 2013-2015 Codes and Standards Impact Evaluation.

2.3.3.8.4. Commission Policy Regarding Energy Efficiency Incentives for Customers With Self-Generation

SDG&E notes that Commission policy "limits what can be supported by [energy efficiency] programs if the customer has self-generation," suggesting that the potential study account for "the increased market penetration and saturation of solar…and the locational distribution of the corresponding [energy efficiency] potential."[69]

This issue was not raised, and therefore not scoped, during the early stakeholder development process. To the extent the Commission continues the policy of limiting energy efficiency incentives for customers with self-generation, it could be useful and important to account for customer adoption of self-generation technologies. Future updates to the potential and goals study may address this if adequate data and resources are available.

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68 *See* http://calmac.org/default.asp.

69 SDG&E opening comments, at 5.

2.3.3.8.5. Non-Resource Related Costs

SoCalGas suggests the usefulness of estimating the full portfolio spending, i.e., inclusive of non-resource costs, in the study's budget projections. However, the Potential Study does not model non-resource interventions, so this change is not within scope of the study.

3. Overview of Energy Savings Goals

Today's decision adopts goals for the IOU territories based on the final draft of the post-2017 Potential Study; the final Potential Study is included in Appendix 1 to this decision. The post-2017 Potential Study period and the goals we adopt cover 13 years, but we expect these goals will be updated with new values by 2020 using the bus stop approach adopted in D.15-10-028.

In general, the goals adopted in this decision update forecasted incremental energy savings that were projected for goals in the post-2015 study and continue the upward trajectory of goals through 2030. The largest source of savings is from codes and standards throughout most of the forecasted period. In addition, in all scenarios, spending levels for resource programs are lower in the short run in some scenarios, but are projected to exceed historical levels in the long run. Finally, as in past potential studies, the commercial sector remains the largest source of savings, but only slightly more than the residential sector for electricity. The residential sector forecasts most savings for gas.

There are at least two issues that are worth noting from this study. First, as stated earlier in this decision, it is apparent that the 2016 update to the Avoided Cost Calculator decreased the cost-effectiveness of traditional energy efficiency programs. Savings from operational, behavioral and retrocommissioning programs appear to compensate for the decrease, however the majority of those savings are expected to come from Home Energy

Reports, which have short-lived savings (i.e., effective useful life is one to two years).[70] The decrease in cost-effectiveness of traditional energy efficiency programs, combined with the relative uncertainty of operational, behavioral and retrocommissioning savings estimates, has important implications for the structure and design of programs going forward.

Second, we also observe that the potential model results have not shown anticipated savings potential in the below-code space. Although the analysis of such savings is still fairly preliminary and more research and data are needed to develop better estimates, we should be prepared to adjust expectations for additional below-code savings to significantly contribute to total energy savings if and as we obtain more and better data.

Finally, we reiterate that the goals we adopt here represent a minimum amount of savings that we expect the program administrators and implementers to achieve. It is important to acknowledge, as the Potential Study does, that the model for estimating energy efficiency potential is just that – a model. The model is necessarily informed by assumptions, which in turn are based on historical cost and savings data. Both the assumptions about costs and savings, as well as actual costs and savings, can continuously be improved upon. We expect the program administrators and implementers to continuously seek to achieve greater savings, cost-effectively, and/or to develop more efficient methods to implement successful energy efficiency programs in

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[70] Measure effective useful life, also referred to as expected useful life, is defined as "[a]n estimate of the median number of years that the measures installed under a program are still in place and operable." In Hall et al. (April 2006). *California Energy Efficiency Evaluation Protocols: Technical, Methodological, and Reporting Requirements for Evaluation Professionals {aka Evaluators' Protocols}* Retrieved from California Public Utilities Commission website: http://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/Utilities_and_Industries/Energy/Energy_Programs/Demand_Side_Management/EE_and_Energy_Savings_Assist/CAEnergyEfficiencyEvaluationProtocols.doc (as of August 4, 2017).

the rolling portfolio framework, in support of the State's clean energy goals and SB 350 in particular.

The following tables show the goals, as adopted in this decision on an annual basis for electricity (GWh), demand (MW) and natural gas usage (MMTherms).

Figure 1. IOU Territory Annual Savings Goals[71]

Table 1. Annual gWh

	Pacific Gas and Electric Company (PG&E)			Southern California Edison Company (SCE)			San Diego Gas & Electric Company (SDG&E)		
Year	**Incentive Programs**	**Codes & Standards**	**Total**	**Incentive Programs**	**Codes & Standards**	**Total**	**Incentive Programs**	**Codes & Standards**	**Total**
2018	445	535	980	405	552	957	75	125	200
2019	505	555	1,060	438	572	1,010	84	130	214
2020	498	559	1,057	442	577	1,019	88	131	219
2021	555	576	1,131	466	594	1,060	107	135	242
2022	565	560	1,125	485	578	1,063	115	131	246
2023	575	621	1,196	511	640	1,151	123	145	268
2024	582	595	1,177	550	613	1,163	133	139	272
2025	601	573	1,174	571	591	1,162	144	134	278
2026	612	538	1,150	588	554	1,142	152	126	278
2027	620	518	1,138	607	534	1,141	159	121	280
2028	635	471	1,106	625	486	1,111	166	110	276
2029	650	426	1,076	646	440	1,086	172	100	272
2030	667	381	1,048	653	393	1,046	177	89	266

[71] Incentive programs include rebate programs; operational, behavioral and retrocomissioning, and low income estimates. The Potential Study (Appendix 1) and Excel-based Results Viewer (http://www.cpuc.ca.gov/General.aspx?id=6442452619) provide a more detailed breakout of savings estimates.

Table 2. Annual MW

	Pacific Gas and Electric Company (PG&E)			Southern California Edison Company (SCE)			San Diego Gas & Electric Company (SDG&E)		
Year	**Incentive Programs**	**Codes & Standards**	**Total**	**Incentive Programs**	**Codes & Standards**	**Total**	**Incentive Programs**	**Codes & Standards**	**Total**
2018	83	120	203	81	124	205	15	28	43
2019	96	122	218	89	125	214	17	28	45
2020	93	137	230	88	142	230	18	32	50
2021	105	163	268	95	168	263	21	38	59
2022	107	158	265	100	163	263	23	37	60
2023	109	194	303	107	200	307	25	45	70
2024	111	186	297	117	192	309	26	44	70
2025	115	180	295	122	186	308	29	42	71
2026	117	173	290	125	178	303	30	41	71
2027	119	169	288	130	174	304	32	40	72
2028	122	160	282	134	165	299	33	37	70
2029	125	152	277	138	157	295	34	36	70
2030	128	145	273	139	149	288	35	34	69

Table 3. Annual MMTherms

	Pacific Gas and Electric Company (PG&E)			Southern California Gas Company (SoCalGas)			San Diego Gas & Electric Company (SDG&E)		
Year	**Incentive Programs**	**Codes & Standards**	**Total**	**Incentive Programs**	**Codes & Standards**	**Total**	**Incentive Programs**	**Codes & Standards**	**Total**
2018	16	14	30	25	26	51	1.8	1.6	3.4
2019	19	14	33	25	26	51	2	1.6	3.6
2020	18	17	35	24	30	54	2.2	2	4.2
2021	20	20	40	26	34	60	2.4	2.2	4.6
2022	23	20	43	26	33	59	2.5	2.2	4.7
2023	24	20	44	30	33	63	2.6	2.3	4.9
2024	24	20	44	29	33	62	2.9	2.2	5.1
2025	24	20	44	29	32	61	3	2.2	5.2
2026	24	15	39	28	25	53	3.1	1.7	4.8
2027	24	13	37	27	22	49	3.3	1.5	4.8
2028	25	13	38	27	22	49	3.4	1.5	4.9
2029	25	13	38	27	21	48	3.5	1.4	4.9
2030	26	13	39	28	21	49	3.7	1.5	5.2

4. Conclusion

It is reasonable to adopt realistic, "aggressive yet achievable" energy efficiency goals for 2018 – 2030 based on the available market potential, as set forth in Figure 1 of this decision. This level of market potential is in turn based on an assessment of economic potential using the TRC test, the 2016 update to the Avoided Cost Calculator and a GHG adder that reflects the CARB Cap-and-Trade APCR Price.

It is also reasonable to defer adoption of cumulative savings goals until Staff can assess the viability of using the method, to be developed by the CEC, for calculating persistence decay.

5. Comments on Proposed Decision

The proposed decision in this matter was mailed to the service list of R.13-11-005 in accordance with Section 311 of the Public Utilities Code and comments were allowed pursuant to Rule 14.3 of the Commission's Rules of Practice and Procedure. On ______________, _________________ filed comments and on __________, ________________ filed reply comments.

6. Assignment of Proceeding

Carla J. Peterman is the assigned Commissioner and Julie A. Fitch and Valerie U. Kao are the assigned ALJs in this proceeding.

Findings of Fact

1. The energy savings goals in Section 3 are aggressive yet achievable.
2. The Commission has determined it is reasonable to set energy efficiency goals based on market potential in past decisions. No party raises an issue with using market potential as opposed to economic or technical potential.
3. The current Avoided Cost Calculator does not reflect the costs of the 2030 GHG targets adopted in SB 32.
4. Without the revised costs of the new GHG targets taken into account in the Avoided Cost Calculator, the Potential Study and subsequent energy efficiency goals will be less accurate.
5. The Cap-and-Trade APCR Price represents the highest cost of compliance with California's cap and trade requirements.
6. The values derived from the interim use of the Cap-and-Trade APCR Price in the Avoided Cost Calculator more accurately inform the Potential Study than the current Avoided Cost Calculator.
7. The values derived from the interim use of the Cap-and-Trade APCR Price in the Avoided Cost Calculator allow the Commission to adopt timely energy efficiency goals better aligned with SB 32 than the current Avoided Cost Calculator.
8. The post-2017 Potential Study includes five scenarios that reflect different cost-effectiveness and participation assumptions, in order to present a reasonable range of energy efficiency potential from which to determine goals.

9. The "mTRC (GHG Adder #1) Reference" scenario includes a GHG adder proposed by parties in the IDER proceeding, R.14-10-003. This adder is based on the CARB Cap-and-Trade APCR price.

10. D.16-06-007 states that "[a] single avoided cost model should apply to all distributed energy resource proceedings."

11. The Commission has adopted an interim GHG adder in R.14-10-003, based on the Cap-and-Trade APCR price.

12. D.16-08-019 finds that future potential and goals studies (beginning with this post-2017 study) should incorporate cumulative goals in addition to annual goals.

13. D.16-08-019 requests Commission staff and consultants, in coordination with the CEC, through the Joint Agency Steering Committee and the Demand Analysis Working Group, to update the methodology used to develop cumulative goals.

14. A reliable method for developing cumulative goals has not been developed.

15. CEC will need to develop a method for calculating decay as part of its SB 350 target-setting responsibilities.

16. The post-2017 Potential Study does not include energy efficiency potential estimates specific to non-investor owned utility program administrators' service areas. Further data and modeling resources are required to develop energy efficiency potential estimates at the city, county or other jurisdiction level. These resources were not included early enough in the development of the post-2017 Potential Study.

17. The post-2017 Potential Study does not include energy efficiency potential estimates for the Public sector. Further data is needed to develop energy efficiency potential estimates for the Public sector. The necessary data collection task was not included early enough in the development of the post-2017 Potential Study.

18. The Commission adopted D.16-11-022, which requires a low-income potential analysis, after Navigant had completed its work for the post-2017 Potential Study.

19. The budget data used to forecast program expenditures in the post-2017 Potential Study are valid.

20. The most recent update to the Database for Energy Efficient Resources (DEER) will not be approved in time for incorporation to the post-2017 Potential Study. The next update to the potential and goals study will align peak savings values with the then-current DEER values, as provided by the bus stop approach adopted in D.15-10-028.

Conclusion of Law

1. Public Utilities Code Sections 454.55 and 454.56 require the Commission, in consultation with the CEC, to identify all potential achievable cost-effective electricity and natural gas efficiency savings and "establish efficiency targets" for electrical or gas corporations to achieve.
2. One of our statutory obligations is setting savings "targets," i.e., goals, for program administrators.
3. It is reasonable to establish goals that are "aggressive yet achievable," and that reflect an accurate estimation of energy efficiency cost-effectiveness.
4. It is reasonable to adopt energy efficiency goals for 2018 – 2030 based on the "mTRC (GHG Adder #1) Reference" scenario in the final draft of the post-2017 Potential Study.
5. It is reasonable to defer adoption of cumulative savings goals until Commission Staff can assess the viability of using the method for calculating persistence decay, to be developed by the CEC.
6. Commission Staff should consider the data and modeling resources needed to develop energy efficiency potential estimates specific to non-IOU program administrators' service areas in future potential and goals studies.
7. IOUs should collect and submit the data needed to develop energy efficiency potential estimates for the Public sector for future potential and goals studies.
8. Future potential and goals studies should include a low-income potential analysis, as required by D.16-11-022.

9. Commission Staff should assess the feasibility of publishing the uncalibrated model of future potential and goals studies.

O R D E R

IT IS ORDERED that:

1. We adopt energy efficiency goals for 2018 and beyond based on the modified Total Resource Cost with a greenhouse gas adder that reflects the State's 2030 greenhouse gas reduction goals, referred to as the "mTRC (GHG Adder #1) Reference" scenario in the final draft of the post-2017 Potential Study.
2. We defer adoption of cumulative goals until Staff can assess the feasibility of using the method for estimating cumulative savings to be developed by the California Energy Commission as part of its energy efficiency doubling target-setting responsibilities.
3. Within 30 days of the issuance of this Decision, the investor-owned utilities must file a Tier 1 advice letter that describes their plans for collecting and submitting data that is needed to inform future potential studies on Public sector market potential to the Commission and/or its potential study consultant(s).
4. Rulemaking 13-11-005 remains open.

This order is effective today.

Dated ______________________________, at Chula Vista, California.

APPENDIX 1

Energy Efficiency Potential and Goals Study for 2018 and Beyond